

case of plants its importance varies with the species or individuals concerned. If during the course of any research temperature factors are suspected, Maps 1 and 2 should be used in order to assess the significance of the temperature limits given. If none of these is satisfactory, new maps should be constructed for other temperatures which may be more relevant.

It often happens that feeding or mating conditions are so affected by temperature that animals migrate in order to find optimum conditions. Map 3 provides a useful instrument for the study of these migrations, because it shows the normal month of the year when temperate conditions prevail. The temperature of 18° C. (64.4° F.) has been taken as an example, and the advance of this temperature from south to north has been mapped. The map can also be interpreted as showing the time of the year when similar temperature conditions prevail at different places. Thus July temperature conditions at Onslow are equivalent to May temperature conditions at Carnarvon and April conditions at Perth. The retreat of the same temperature southwards is shown in Map 4. In addition, the march of other temperatures may be significant, and similar maps could be compiled.

Temperature maps of the more usual type, showing average temperatures for various months and for the year, and annual and daily temperature ranges, are already available in the author's volume on "Australian Climates and Resources" (1947) and need not be repeated here.

(To be continued).

## FROM FIELD AND STUDY

**Growth of the Blackboy.**—When I was young (10 years of age) one of the games of my mates and myself was to "ride" certain of the blackboys (*Xanthorrhoea preissii*) outside the school. We broke all the "rushes" off and made the heads smooth and round, using them as perches to sit on. We broke up for a fortnight's vacation and during that time the "rushes" grew rapidly, in the case of my own "mount" by about 5 inches. Blackboys eaten down by kangaroos or other animals grow a complete new head in a year. This may be seen in any virgin bush.

—W. H. BUTLER, East Perth.

**Heron at Bunbury.**—Adjacent to the beach at South Bunbury is a depressed area of about ten acres. During the winter rains this is converted into a miniature lake with a surrounding boggy swamp. It is favoured always by pairs or family parties of the local White-faced Heron (*Notophoxyx novae-hollandiae*) and as the rains diminish and the pool contracts these birds are joined by pairs of the Pacific Heron (*N. pacifica*). This year (1947) I noticed on frequent occasions a pair of the Nankeen Night Heron (*Nycticorax caledonicus*). I took a field-glass with me and they proved to be the adults, with unspotted plumage. Last but certainly not least, was a distinguished visitor in a very fine individual of the large pure-white Egret (*Egretta alba*).

Hérons are cautious birds but after a time become less timid of human beings. Twice the Egret flew over my head at a low altitude and I could see its long, black, trailing legs. Near my home and within a few yards of the busy entrance road to the town is another small depression, full of calling frogs and the haunt of a pair of White-faced Herons, which seem to have lost all fear of the incessant traffic. One, however, must keep moving. A sudden stop arouses suspicion and up they rise.

—F. LAWSON WHITLOCK. Bunbury.

**Underwater Swimming in Cormorants.**—How the Pied Cormorant (*Phalacrocorax varius*) uses its wings to swim but mainly for steering when fishing underwater I was able to witness when I was fishing at Fremantle recently. I was using at the time a heavy kingfish line. The water was remarkably clear and I could see to a depth of perhaps 10 feet. In fishing for kingfish (*Sciaena antarctica*) a live bait is used and the line is looped in a cleft stick. The fish bait (in this case blue mackerel) keeps moving and the stick is fastened to the wharf and, projecting over the water, vibrates slightly. Should any big fish approach the mackerel swims more vigorously and the stick shakes more. When the bait is taken the loop pulls from the cleft and the angler hauls up the line. I saw the stick holding my line vibrate rapidly and the line shot out of the stick and moved off in a seaward direction. Thinking I had another kingy I started to pull in the line but as the pull was not like that of a fish I realised it was something different. As the line came in I saw I had hooked a cormorant which was fighting, strangely enough, to keep to the deeper water. The wings were spread out, with a braking effect and the feet pushed forwards. This case was exceptional I admit, but at other times in the same place I have seen cormorants swimming freely underwater chasing fish; their wings were half-spread and they were using them to twist from side to side.

—W. H. BUTLER, East Perth.

**A Heronry of the Nankeen Night Heron.**—On January 24, 1948, in company with Dr. D. L. Serventy and Mr. Angus Robinson, I visited the Blythwood estate, Pinjarra, the home of Mr. Donald McLarty, to investigate a report that Nankeen Night Herons (*Nycticorax caledonicus*) were nesting there.

We located the heronry, which was a large one, extending for about a quarter of a mile along a bend of the Murray River, 2½ miles upstream from Pinjarra. With one exception, which was in a Paperbark (*Melaleuca parviflora*), all of the nests were in Flooded Gums, locally called "Blue Gums" (*Eucalyptus rudis*), some trees having as many as eight to ten nests, but the majority had from three to six. It was not easy to make an accurate census, but we actually counted 194 nests and believed many more were overlooked. It was agreed that an estimate of 250 nests would be a very fair one.

Very few birds in adult plumage were seen at the heronry itself. We flushed several, however, in neighbouring swamps, where